Clean Water Act, Section 401 Beneficial Use Assessment for the Lower Guadalupe River Flood Protection Project

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Clean Water Act, Section 401 Beneficial Use Assessment for the Lower Guadalupe River Flood Protection Project

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Clean Water Act, Section 401 Beneficial Use Assessment

Introduction

Lower Guadalupe River Flood Protection Project

The Santa Clara Valley Water District (District) proposes to construct the Lower Guadalupe River Flood Protection Project (LGRP) along the lower 10.5 kilometers (km) (6.5 miles) of the Guadalupe River, primarily located between Interstate 880 (I-880) and the Union Pacific Railroad (UPRR) bridge in the cities of San Jose and Santa Clara. Some additional work will be done immediately downstream of the UPRR bridge along the Alviso Slough in the Baylands area. Through the LGRP, the District proposes to modify previous flood-control improvements initiated in 1982 and 1995 on the lower Guadalupe River. These modifications would restore the flood conveyance capacity of the existing channel and provide additional capacity to convey floodflows of approximately 481 cubic meters per second (cms) (17,000 cubic feet per second [cfs]) during a design flood event. The proposed modifications would balance the need for flood-control structures and channel maintenance with the goal of protecting and enhancing environmental conditions and public access.

For purposes of evaluation and discussion, the LGRP is divided into 7 reaches. These reaches are (from upstream [south] to downstream [north])

- reach A: I-880 to U.S. Highway 101 (U.S. 101),
- reach B: U.S. 101 to Trimble Road,
- reach C: Trimble Road to Montague Expressway,
- reach D: Montague Expressway to the Hetch Hetchy Aqueduct,
- reach E: Hetch Hetchy Aqueduct to Tasman Drive,
- reach F: Tasman Drive to State Route (SR) 237, and
- reach G: SR 237 to the UPRR bridge in Alviso.

Baylands mitigation features are located downstream of the UPRR bridge.

The major elements of the LGRP include:

- minor bank modification at the I-880 bridge approach in reach A;
- construction of up to 6 grade control weirs in the reach-A low-flow channel downstream of I-880 and grade control weirs and invert stabilization at U.S. 101, Trimble Road, and Montague Expressway;
- construction of floodwalls in reach A (west bank) upstream of U.S. 101, in reach F upstream of SR 237, and in reach G;
- levee improvements through construction of levee raises in reaches A–F;
- replacement of the SR 237 eastbound bridge to match the westbound bridge profile;
- modification of stormdrain outfalls in reaches A, C, D, F, and G;
- improvement of maintenance access roads, construction of new depressed maintenance roads in reach G, and construction of maintenance road undercrossings at bridges;
- bridge scour protection and invert stabilization;
- construction of an overflow weir in the Baylands;
- accommodation of future recreation trail extensions on levees in the Project Area;
- moderate to aggressive management of sediment and vegetation in reaches A–G; and
- levee maintenance.

A draft environmental impact report (EIR) (SCH# 2000042051) was issued for the LGRP. The public comment period for the draft EIR began on August 22, 2001, with an announcement of the availability of the draft EIR. On October 2, 2001, a public hearing on the draft EIR was held before the District board of directors in the community of Alviso. The formal public comment period closed on October 12, 2001. Currently, the District is preparing a final EIR, and the board of directors will hold a public hearing to consider certification of the final EIR. Certification of the final EIR is expected on May 21, 2002.

Clean Water Act, Section 401: Water Quality Certification

When applying for a Section 404 permit to discharge dredged or fill material into waters of the United States, the U.S. Army Corps of Engineers requires certification from the state in which the project occurs indicating that such discharge will comply with applicable provisions of Section 401 of the Clean Water Act (CWA). In California, Section 401 authority is the responsibility of the State Water Resources Control Board (SWRCB) and its regional water quality control boards. Because of the LGRP's effects on jurisdictional waters of the United States, compliance with Section 404 and Section 401 of the CWA is required. The San Francisco Bay Regional Water Quality Control Board (RWQCB) will be responsible for issuing certification for the proposed project.

The SWRCB and the San Francisco Bay RWQCB establish policies and procedures that are designed to ensure the protection of surface water and groundwater from degradation. The San Francisco Bay RWQCB establishes beneficial uses of surface water and groundwater resources, along with narrative and numerical water quality objectives to protect those uses, in its *Water Quality Control Plan for the San Francisco Bay Basin* (San Francisco Bay Regional Water Quality Control Board 1995).

Organization of Beneficial Use Assessment

This beneficial use assessment (BUA) relies on the impact analysis and project description contained in the publicly circulated EIR. This BUA evaluates project effects on beneficial uses of the Guadalupe River and South San Francisco Bay, the receiving water of the Guadalupe River. The Guadalupe River was evaluated separately from South San Francisco Bay. Some designated beneficial uses apply to the Guadalupe River and Alviso Slough and the South San Francisco Bay, but other beneficial uses apply only to one. Table 1 lists the beneficial uses evaluated in this BUA by water body group.

Table 1. Beneficial Uses Evaluated

Guadalupe River and Alviso Slough	South San Francisco Bay
Cold Freshwater Habitat (COLD)	Ocean, Commercial, and Sport Fishing (COMM)
Freshwater Replenishment (FRSH)	Estuarine Habitat (EST)
Groundwater Recharge (GWR)	Preservation of Rare and Endangered Species (RARE)
Industrial Service Supply (IND)	Water Contact Recreation (REC-1)
Fish Migration (MIGR)	Shellfish Harvesting (SHELL)
Municipal Service Supply (MUN)	Fish Spawning (SPWN)
Preservation of Rare and Endangered Species (RARE)	Wildlife Habitat (WILD)
Water Contact Recreation (REC-1)	
Noncontact Water Recreation (REC-2)	
Fish Spawning (SPWN)	
Warm Freshwater Habitat (WARM)	
Wildlife Habitat (WILD)	

As described in greater detail in this report, the San Francisco Bay Water Quality Control Plan (San Francisco Regional Water Quality Control Board 1995) and best professional judgement were used to select those beneficial uses to be evaluated for both water body groups. For the South San Francisco Bay, acting as a receiving water of the Guadalupe River, only those beneficial uses susceptible to degradation as a consequence of mercury transport were evaluated. No other mechanism of beneficial use degradation was considered significant. For example, IND, MIGR, NAV and REC-2 were not considered susceptible to degradation because of mercury contamination, and thus were not discussed in any great detail for the South San Francisco Bay assessment. In addition, the San Francisco Bay Water Quality Control Plan did not include RARE for any water body of the Guadalupe River watershed; however, RARE beneficial uses were evaluated in this BUA.

Beneficial Use Assessment for Guadalupe River and Alviso Slough

The LGRP will directly affect approximately 6.5 miles of the lower Guadalupe River and the Alviso Slough. This BUA evaluates project effects on beneficial uses on the Guadalupe River and includes supporting citations. All definitions of beneficial uses discussed below are taken from the San Francisco Bay RWQCB water quality control plan (1995). Cumulative analysis is provided where appropriate.

Cold Freshwater Habitat (COLD)

Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

The EIR analysis of environmental effects addressed temperature requirements of cold freshwater habitat for fish species including anadromous steelhead (*Oncorhynchs mykiss*) and chinook salmon (*Oncorhynchus tschawytscha*). The presence of these anadromous fish species has been documented; however, existing temperature conditions for project segments are sometimes suboptimal for chinook or steelhead spawning and juvenile rearing.

Water temperature is critical to the survival and perpetuation of these anadromous cold water species. Construction of the LGRP would remove vegetation, potentially affecting shade cover that could result in higher temperature; therefore, an analysis of potential thermal effects was conducted. Because changes in temperature affect oxygen saturation and algal productivity, including photosynthesis and respiration, a change in temperature could cause a corresponding change in dissolved oxygen. Project effects on cold freshwater habitat beneficial uses are summarized in terms of temperature and dissolved oxygen below.

Temperature

Because vegetation and sediment management activities could affect water temperature and salinity, the JSATEMP water temperature model was used on the lower Guadalupe River and Alviso Slough north to its mouth at Coyote Creek. The JSATEMP hourly water temperature model was originally developed to simulate water temperature changes associated with the construction of the downtown San Jose Guadalupe River project just upstream of the LGRP (U.S. Army Corps of Engineers 2000). The model is a spreadsheet format that uses hourly meteorological conditions, daily flow rates, and channel characteristics (e.g., shade and water depth) as input variables. Because Alviso Slough and a portion of the lower Guadalupe River are tidally influenced, tidal effects on volume were included in the extended model and electrical conductivitiy was added as a measure of salinity. The model was calibrated to measured data collected in 1998 from the lower Guadalupe River.

The JSATEMP modeling identified several general temperature impact mechanisms in the Guadalupe River. Increases in water temperature are cause primarily by decreases in the amount of SRA cover vegetation along the streambanks of the river. Decreases in streamflow also increase water temperature; temperatures particularly increase in summer when streamflows are relatively low. Flow rates and weather, including humidity and solar radiation, are the primary variables affecting water temperature.

Based on aerial photography and field visits, project activities would not have an effect on SRA cover or on low-flow channel geometry that may affect residence time, depth, or area exposed to solar radiation; therefore, no effects on water temperature would result from vegetation or sediment management.

Dissolved Oxygen

Dissolved oxygen concentrations are believed to support cold freshwater habitat beneficial uses. Dissolved oxygen concentration in water increases or decreases coincident to water temperature. Water temperature can also affect algal growth rates, possibly affecting oxygen concentration through the process of respiration, photosynthesis, and decay. Because temperature changes are not anticipated with implementation of the LGRP, concentrations of dissolved oxygen in the lower Guadalupe River are not expected to change.

Levels of dissolved oxygen measured in the Guadalupe River by U.S. Geological Survey (USGS) indicate that year-round concentrations of dissolved oxygen have been generally greater than 8 milligrams/liter and suitable for aquatic life at all measured temperature conditions (U.S. Army Corps of Engineers 2000). No measurement of dissolved oxygen has been collected in the lower Guadalupe River. However, USGS monitoring data indicate that the levels of dissolved oxygen in the river are generally high and suitable for aquatic life, and the effect of the LGRP on dissolved oxygen content in the lower Guadalupe River is not expected to change these conditions.

Groundwater Recharge (GWR)

Uses of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting saltwater intrusion into freshwater aquifers.

Until 1994, the District actively recharged groundwater of the Santa Clara basin by utilizing instream percolation basins. The District released a draft EIR for a proposed instream recharge program in March 1995 that would continue historic activities associated with the installation and operation of up to 44 spreader dams, providing 34,000 acre-feet of artificial annual recharge (approximately 23% of the District's artificial recharge capacity). The instream recharge program is under review by the District, and comments on the draft EIR are being considered. The proposed recharge program that would evolve from a reconsidered program is not presently known.

Groundwater recharge ponds are located along the Guadalupe River approximately 5.5 miles upstream of I-880 and along Guadalupe Creek. These reservoirs were designed to capture winter rains for groundwater recharge programs. Water is released from the reservoirs for diversion into recharge ponds and to allow groundwater recharge through the streambeds. The District's operational goal is to release only water that can be used in its recharge operations or to meet mandated flow requirements. The LGRP would have no significant effect on the District's ability to continue groundwater recharge or any significant effect on groundwater recharge beneficial uses.

Fish Migration (MIGR)

Uses of water that support habitats necessary for migration, acclimatization between fresh water and salt water, and protection of aquatic organisms that are temporary inhabitants of waters within the region.

The LGRP could potentially affect fish migration because of project construction and operation. The principal migratory species of concern are chinook salmon and steelhead. The ability of these anadromous species to migrate to and from San Francisco Bay and spawning grounds of the Guadalupe River and its tributaries is critical to their success. Barriers to migration would include temporary dewatering of individual segments during construction and morphologic characteristics of the channel resulting from sediment management activities. As previously discussed for cold freshwater habitat beneficial uses, temperature and dissolved oxygen changes are not expected; therefore, conditions of high temperature or low dissolved oxygen acting as barriers to migration are considered less than significant.

Project effects on anadromous fish migration are presented below in terms of channel dewatering and morphologic barriers. No aspect of the LGRP is believed to affect the ability of other fish species to move about the Guadalupe River system; therefore, these species are not considered further.

Channel Dewatering

In-channel construction, including riverbank and channel-bed construction, would be limited to the summer low-precipitation period (April 15–October 15) to reduce the likelihood of adverse effects on rearing juvenile steelhead and chinook salmon and on adult fish migrating to upstream spawning areas. Construction requiring stream dewatering, stream crossings, or work in the channel bed will not commence before May 1. Work can commence on May 1 only if the stream-monitoring criteria are satisfied by that date. Stream monitoring criteria include monitoring to determine whether average daily water temperatures have exceeded 68°F for at least 5 consecutive days and whether outmigrating salmonids are absent. Should stream-monitoring criteria not be met, channel work and stream dewatering will not be allowed to commence until June 1. If necessary, upstream passage for chinook salmon will be provided through or around construction sites from September 1 through October 15. Adhering to these construction schedules will minimize adverse impacts on migrating salmonids.

Before actual channel dewatering, a series of steps would be taken to prevent stranding of fish within the dewatered segment. Downstream flow would be maintained through diversions around construction areas. Before diverting flows, there will be culverts and siphons in place so downstream flow is not interrupted. In dewatered segments, diversion flows will be decreased incrementally to allow fish to move downstream of their own accord. Residual water will be pumped offsite or into settling tanks, but not directly in the downstream channel. The District will design the bypass culverts and sediment excavation channels to avoid creating features that could result in the formation of ponded-water habitats with the potential to entrap fish during receding flow events.

Morphologic Barriers

Grade control structures would be constructed in the natural channel in reach A and at 3 bridge crossings to stabilize the streambed, improve streambank stability, and provide greater spawning area and improved rearing habitat. Activity related to the construction of grade control structures has the potential to adversely affect fish migration and spawning gravels if affected gravels are not replaced following construction; however, these impacts are expected to be minor. Disturbance to the low-flow channel would be limited to the weir sites and would be temporary. In addition, construction of the grade control structures would be undertaken during summer when adult steelhead and chinook salmon are least likely to be migrating up the lower Guadalupe River. The design of the grade control structures would include consideration of the need to allow for anadromous fish passage, and the direct effect of the structures on streamside and low-flow channel fish habitat would be minimal and would not affect fish migration through the area. Construction would not create permanent barriers to fish passage in the low-flow channel.

The effects of proposed sediment and aquatic vegetation removal activities in the LGRP area would be mitigated to a less-than-significant level. BMPs would be used to reduce incidental fallback and maintain acceptable water quality levels. Sediment management activities would include periodic excavation of former sediment management areas adjacent to the low-flow buffer area in reaches B–E. Sediment excavation would not directly affect fish habitat in the low-flow channel because buffer areas would be maintained between sediment excavation areas and the low-flow channel. The only exception would occur where the excavated areas connect with the low-flow channel. Sediment excavation in reaches B–E could lead to the stranding of juvenile steelhead and chinook salmon when floodwaters recede after a flood event if a connection between excavated areas and the low-flow channel is not available. The potential for stranding of fish in sediment excavation areas would be reduced by maintaining a connection between the channels and the low-flow channel so that the excavation channels would drain completely following flood events.

The controlled inlet weir on Alviso Slough would provide a hardened spillway from which floodflows would spill over the levee and into the Cargill Salt Ponds. Under existing conditions, floodflows overtop and breach the levee separating the river channel from the salt ponds, causing lower Guadalupe River floodflows to spill uncontrolled into the salt ponds. Under future, with-project conditions, spills over the inlet weir are expected to be similar to existing conditions.

The potential for delayed migration or entrapment of fish in the salt ponds is dependent on a number of variables, including the frequency and duration of flow diversion into the ponds, the coincidence of flow diversion over the weir with the migration timing of adult and juvenile fish, and the behavior of juvenile chinook salmon and steelhead. Operation of the weir is more likely to occur in winter when juvenile chinook salmon are present in the river or migrating to the ocean, rather than in spring during the primary migration period for steelhead smolts.

The LGRP is not expected to increase the frequency of flooding of the salt ponds or the potential number of fish stranded during a design floodflow event; rather, it is expected only to change the location of potential fish stranding.

Furthermore, the LGRP would reduce the frequency of floodflow overbanking along the Guadalupe River below I-880, thereby reducing the potential that currently exists for emigrating steelhead and chinook salmon juveniles to be carried or diverted along with overbanking.

Cumulative Analysis—Barriers to Passage

Substantial efforts provide low-flow channel connections and to encourage salmonid migration are proposed as project mitigation. Present and future flood control projects that could affect the river channel would be required to avoid or mitigate fish habitat effects. The contribution of the LGRP to cumulative impacts on fisheries in the Guadalupe River is less than significant because implementing the LGRP would not require changes to the low-flow channel that could affect fisheries resources.

Freshwater Replenishment (FRSH)

Uses of water for natural or artificial maintenance of surface water quantity or quality.

Reservoirs in the LGRP area were designed to capture winter rains for groundwater recharge programs and to maintain instream flow requirements. Generally, these instream flow requirements are based on the needs of other water rights holders, fish populations, recreation, and other public trust resources. Flood control improvements would not affect freshwater replenishment, and the District would continue to maintain instream flow requirements by releasing reservoir water. No impact on freshwater replenishment beneficial uses is anticipated.

Industrial Service Supply (IND)

Uses of waters for industrial activities that do not depend primarily on water quality, including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, and oil well repressurization.

As discussed for groundwater recharge and freshwater replenishment beneficial uses, project activities would not adversely affect the District's groundwater recharge activities or affect the District's freshwater replenishment. Therefore, no impact on industrial service supply beneficial uses is anticipated.

Municipal Supply and Domestic Supply (MUN)

Uses of water for community, military, or individual water supply systems, including, but not limited to, drinking water supply.

Surface waters of the Guadalupe River are not used for municipal or domestic supply except for groundwater recharge as previously discussed. Project activities would not adversely affect the District's groundwater recharge activities. Also, the LGRP would not adversely affect the quality of groundwater in the region that is used for municipal and domestic supply. No impact on municipal supply and domestic supply beneficial uses is anticipated.

Preservation of Rare and Endangered Species (RARE)

Uses of waters that support habitats necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened, or endangered.

Chinook salmon and steelhead are considered endemic to the Guadalupe River watershed. The DFG has stated that its focus with respect to fisheries management in the watershed is the perpetuation and restoration of endemic fish populations, including steelhead populations but not including hatchery strain chinook salmon. In addition, the DFG does not place a special species designation on the Guadalupe River's chinook salmon. NMFS considers chinook salmon in the Guadalupe River to be part of the California Central Valley fall-run and late-fall-run evolutionary significant units (ESUs). NMFS has determined that the Central Valley fall-run and late-fall-run chinook salmon ESUs do not warrant listing, but the species is considered a candidate species (64 FR 50394). In addition, the Guadalupe River to be essential fish habitat for chinook salmon. NMFS considers steelhead of the Guadalupe River watershed to be part of the Central California Coast steelhead ESU, which has been listed as threatened under the federal Endangered Species Act (62 FR 169).

For chinook salmon and steelhead, success depends on streamflow, spawning habitat availability (e.g., barriers), bed load processes (i.e., sedimentation), and water quality, which includes temperature, dissolved oxygen, and mercury. Several of these parameters, including streamflow, barriers, temperature, and dissolved oxygen have already been discussed as they relate to other beneficial uses. Assessment of these parameters would also apply to the beneficial use of preservation of rare or endangered species. Bed load processes, including water velocity, depth, and gravel flushing, are most applicable to salmonid spawning and are addressed under the "Fish Spawning" beneficial use below. However, as a toxic and bioaccumulative constituent, mercury has the potential to adversely affect salmonid success.

Mercury

Mercury has been documented as a ubiquitous contaminant throughout much of the Guadalupe River watershed. Because of cinnabar mining since the mid-19th century in the upper reaches of the watershed, mercury has become distributed throughout watershed sediments at elevated concentrations as far downstream as South San Francisco Bay.

The entire Guadalupe River, its tributaries, and south San Francisco Bay are classified as impaired with regard to mercury contamination under Section 303(d) of the CWA. As described previously, a draft TMDL program and implementation plan have been developed for San Francisco Bay calling for a 92% reduction in the amount of mercury loading currently entering the bay from the Guadalupe River watershed.

Project activities would not change the quantity of mercury that enters the LGRP area from the watershed, or the pattern of its entrance; however, because of the association of mercury with soils and sediments, project construction activities and long-term operations of the project could affect transport and methylation of mercury in the lower Guadalupe River. Therefore, the LGRP could affect mercury behavior by increasing the transport and loading of mercury to the San Francisco Bay and the formation of methyl mercury in the lower Guadalupe River.

During project construction, construction-related erosion and sedimentation would be managed through implementation of an erosion and sediment control plan. The erosion and sediment control plan would outline procedures and policies to avoid and minimize the discharge of sediment to the Guadalupe River during construction activities.

In addition, a soil management plan (SMP) would be implemented for the LGRP that would provide procedures for classifying soils, as well as procedures and criteria for disposal and reuse. The SMP would be updated before project implementation to reflect final project design and to incorporate input from the San Francisco Bay RWQCB regarding management of soils that contain elevated mercury concentrations. The updated SMP would be submitted to the San Francisco Bay RWQCB for approval before implementation. The following restrictions on soil management would be included in the SMP:

- Sediments with mercury concentrations that exceed hazardous waste criteria under federal or state law must be disposed off-site in appropriately licensed disposal sites. The determination of hazardous properties will comply with all applicable statutes and regulations pertaining to hazardous wastes.
- Excavated soils with mercury concentrations not exceeding hazardous waste criteria but greater than 1 mg/kg may not be reused on the site unless such soils are placed above the low-flow channel, or in adjacent areas where frequent exposure to overbank flow is not anticipated to occur above the water-surface elevation defined by the 3-year recurrence interval.
- Excavated surfaces above the 3-year recurrence interval elevation that contain mercury concentrations higher than hazardous-waste levels will be overexcavated and replaced with soils meeting the above criteria for on-site reuse. Excavated surfaces below the 3-year recurrence interval elevation that contain mercury concentrations greater than 1 mg/kg will be overexcavated and replaced with clean imported soil.

The limitations on on-site reuse of excavated soils and sediments would also apply to operation and maintenance activities throughout the life of the LGRP.

The 1-mg/kg requirement is based on regulatory guidance from the San Francisco Bay RWQCB (2000), which states that reducing bank sediment concentrations of mercury to 1 mg/kg or less will reduce the water-column concentration of total recoverable mercury. Mercury in the project area river water presently exceeds Basin Plan numeric water quality objectives; therefore, incorporation of the proposed soil reuse restrictions would result in improved water quality under postproject conditions and provides an opportunity to remove large quantities of mercury from the aquatic environment, thus reducing the total mass of mercury in the watershed.

Cumulative Analysis—Mercury

Actions throughout the watershed, including flood control projects, could contribute to changes in the locations and rates of mercury biotransformation; however, the extents, rates, and locations of potential changes are unknown. The District is committed to implementing the SMP throughout the watershed and throughout construction and operational maintenance. Implementing the SMP is an immediate action the District can take to manage mercury in the system. Removing contaminated sediments from the channel could conceivably remove transportable mercury from the system that would be equivalent to the mercury wasteload discharged by all existing NPDES dischargers for years.

Water Contact Recreation (REC-1)

Uses of water for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and uses of natural hot springs.

Activities such as fishing have been documented on the Guadalupe River, and swimming, canoeing, and wading are also potential recreation activities. All activities have the potential for ingestion of water, and there is the potential for consumption of fish.

The LGRP would not affect flows or navigability of the main channel. Therefore, canoeing would not be affected.

Of principal concern is fishing with subsequent consumption of caught fish. Fish tissue mercury concentrations above California Department of Health Services advisories have been well documented in some fish species likely to be caught and consumed by some anglers. Fish consumption health advisories have been posted in the watershed that warn anglers of fish tissue mercury concentrations and provide guidelines for consumption.

The District believes that appropriate project commitments and efforts will be in place to mitigate and manage mercury transport and biotransformation. Although discussed in greater detail for preservation of rare and endangered species, biotransformation and accumulation of mercury in fish tissues affects all aquatic species. However, the assessment is identical. The District believes that potential project impacts on mercury biotransformation ultimately will be found less than significant through monitoring and implementation of the SMP.

Noncontact Water Recreation (REC-2)

Uses of water for recreational activities involving proximity to water, but not normally involving contact with water where water ingestion is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

Aesthetic enjoyment of project segments occurs in areas of public access and from adjoining properties or properties within the immediate viewshed. Noncontact water recreation could include picnicking, hiking, and wildlife viewing. Although ingestion of water is not likely, the aesthetic quality of the water, including its color, odor, and floating or suspended matter, can enhance or detract from the recreational activity. In addition, the condition of riparian vegetation, which is dependent on the presence of river and water, can directly and/or indirectly enhance or detract from the recreational activity. One plausible or likely effect the LGRP will have on noncontact recreational activities is the removal of riparian vegetation and geomorphic alteration of the channel. Nuisance conditions such as floating or suspended matter, odors, and scums were not considered significant. Although many of these conditions are relevant to conditions of stagnation and algal blooms, conditions conducive to stagnation and algal blooms are not expected and are incongruent with cold freshwater habitat beneficial uses and associated anadromous fish resources.

Riparian Vegetation and Geomorphic Alteration

Project activities will result in the removal of riparian vegetation. Replanting of disturbed segments will follow a detailed vegetation mitigation monitoring plan that will provide detailed information on planting locations, plant materials, planting methods, maintenance methods, monitoring methods, and success criteria. Most of the proposed mitigation will occur in the channel bottom, adjacent to the low-flow channel in reaches A and B, and in the levee setback area in reach B. Additional planting areas may be located adjacent to or near the low-flow channel in reaches C and D. The District will further explore the feasibility of implementing riparian vegetation in reaches C and D, pending further hydraulic and field investigations and the results of the revised riparian impact analysis.

Overall, the streamside mitigation areas in reaches A and B will increase the functions and values for terrestrial species by providing a more diverse canopy structure and by providing a near-continuous corridor of riparian vegetation adjacent to the low-flow channel. These mitigation areas will also increase the functions and values of the existing habitat for aquatic species by providing overhead and instream SRA cover for aquatic species. The streamside mitigation areas in reaches A and B will connect the lower reaches of the Guadalupe River (i.e., reaches C, B, and G) and the proposed mitigation areas associated with the other flood protection projects along the Guadalupe River and Guadalupe Creek.

Fish Spawning (SPWN)

Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Warm and cold freshwater water fisheries exist within the Guadalupe River. Fisheries within the Guadalupe River are largely self-sustaining, and no significant stocking program is in effect. Spawning and incubation success depends largely on suitable flows, substrate, temperature, dissolved oxygen, and general habitat quality. Temperature and dissolved oxygen, previously discussed as they relate to cold freshwater fish habitat, also apply here. Because chinook salmon and steelhead are considered good indicator species of habitat degradation due to their relative sensitivity to environmental change, efforts to protect these two salmonids and their habitat would likely protect other fishery resources (Santa Clara Valley Water District and U.S. Army Corps of Engineers 2000). Therefore, the EIR focused its analysis on these species.

Suitable anadromous spawning habitat exists on the Guadalupe River mainstem, as well as on Guadalupe and Alamitos Creeks. Flows and substrate play important roles in salmonid spawning success. Channel modifications could affect water velocity, water depth, and gravel flushing, which are integral to continued spawning success. Project effects on water velocity, water depth, and gravel flushing are discussed below.

Velocity, Depth, and Gravel Flushing

The potential for adverse effects on spawning chinook salmon and steelhead in mainstem segments depends on several variables, such as water depths and water velocity in the main channel. The LGRP is not expected to change velocity or depth of the channel. The construction of grade control weirs in the low-flow channel downstream of I-880 would stabilize the channel bottom and create plunge pools at several location immediately downstream of I-880. These structures are expected to improve fish habitat by enhancing the pool/riffle sequence in this area of the channel.

Implementation of the LGRP would directly or indirectly affect spawning gravel in 2 ways. First, because construction activities would result in the potential for movement of fine sediments, spawning gravel quality could decrease. Decreased spawning gravel quality could reduce the abundance of aquatic invertebrates, resulting in reduced fish survival. Also, stream gravel may be removed during construction of the grade control structures. The resulting decrease in availability of spawning habitat could reduce fish reproduction.

Under the LGRP, the District would replace any spawning gravel disturbed during construction activities. For example, at grade control sites, the District would retain gravels removed during construction and replace them on the upstream side of the vortex rock weirs immediately following construction. Construction activities would be temporary and best management practices would minimize the potential for introducing fine sediments into aquatic habitats.

Warm Freshwater Habitat (WARM)

Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Because chinook salmon and steelhead are considered good indicator species of habitat degradation because of their relative sensitivity to environmental change, efforts to protect these salmonids and their habitat would likely protect other fishery resources. Therefore, the EIR focused its analysis on these species. Efforts to eliminate, minimize, or mitigate impacts on chinook salmon and steelhead and their habitats are believed to be protective of all other resident native and introduced warm water fish on the Guadalupe River.

Wildlife Habitat (WILD)

Uses of waters that support wildlife habitats, including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as water fowl.

Project construction would affect riparian and wetland habitat, both of which are used by a variety of terrestrial and avian wildlife species. Potential impacts on wildlife are intrinsically associated with impacts on their habitats, especially vegetation but also water quality as it relates to direct ingestion or effects on food items. Possible wildlife habitat degradation as it relates to vegetation disruption and potential for increased mercury biotransformation is discussed below.

Vegetation Disruption

Removal of riparian vegetation would result in the loss of foraging, breeding, and roosting habitat for common wildlife species in the LGRP area. Project activities would not result in fragmentation of existing riparian habitats because most of the riparian habitat would occur on existing levees and the District would maintain the low-flow channel buffer area. Routine sediment and vegetation maintenance would periodically reduce wildlife habitat within approximately the same management zones throughout the life of the LGRP. Sediment and vegetation maintenance would most likely take place on an irregular basis, depending on the rate of sediment accumulation and vegetation growth (Santa Clara Valley Water District 2001).

Under the LGRP, impacts on wetland habitat from project activities and sediment and vegetation management would result in a loss of wildlife habitat for common species that are associated with wetland environments. Because most of the construction features for the LGRP are located on the tops of levees, the effects of constructing flood-control facilities on wildlife species associated with wetland vegetation would be minimal. Construction-related effects on wetlands and other waters of the United States in the vicinity of SR 237 (for the bridge-raising or bypass option) would have only a temporary effect on wetland wildlife species because the river channel would not be permanently changed in this area. Temporary construction-related disturbance of wildlife species in the construction zone would be expected. There would be permanent impacts on wetlands and other waters of the United States in reach G as a result of construction of new, depressed maintenance roads adjacent to the toe of the levees. Construction and fill in this area would permanently reduce the wetland vegetation that is available to common wildlife species.

Sediment and vegetation management effects on wildlife associated with wetlands and waters of the United States would be similar to construction effects, except that habitat would be periodically removed from sediment management areas in reaches B–E and from vegetation management areas in reaches A–G. Annual wildlife effects from loss of habitat in these areas would vary depending on the location and magnitude of the management activity. The potential for fragmentation of wetland habitat for wildlife is expected to be relatively minor because the LGRP would maintain a buffer area to the low-flow channel and periodic regrowth of wetland habitat following initial removal would provide habitat value for common wildlife species.

The District will replace or compensate for the loss of riparian vegetation and wetland vegetation. To implement this mitigation, the District will develop an implementation plan. The implementation plan will consider the habitat quality and type of habitat losses. The implementation plan will ensure that required mitigation plantings are successful. It will identify the location and quantity of mitigation planting areas; the quantity, size, and type of mitigation plantings; installation and maintenance techniques; and monitoring and reporting requirements.

Cumulative Analysis—Vegetation Disruption

With mitigation to compensate for vegetation losses, cumulative impacts on vegetation in the Guadalupe watershed are considered less than significant. Loss of vegetation from other projects in the watershed would be fully mitigated.

Mercury

A net increase in biotransformation of mercury to organic forms such as methyl mercury would significantly increase the risk of bioconcentration and bioaccumulation. Biotransformation of mercury within the aquatic environment could lead to exposure of certain wildlife species through ingestion of aquatic organisms. Although exposure through this food chain route could already be occurring, the District has committed to an SMP requiring offsite disposal of some sediments based on mercury concentration thresholds and has committed to a monitoring program.

Cumulative Analysis—Mercury

Cumulative effects on mercury transport and biotransformation and their relative impact on wildlife species, primarily through aquatic organism ingestion, would be similar to that discussed for the preservation of rare or threatened species. Implementing the SMP for all District channel projects and implementing a monitoring program would provide for immediate action and future refined action applicable to mercury management related to District activities.

Beneficial Use Assessment for Lower South San Francisco Bay

Lower South San Francisco Bay is the receiving water body of the Guadalupe River. Lower South San Francisco Bay has been listed as impaired for mercury, with impairment largely linked to mercury contamination in the Guadalupe River (San Francisco Bay Regional Water Quality Control Board 2000). Flood control efforts on the Guadalupe River could affect mercury transport and fate in lower South San Francisco Bay. No other aspect of the LGRP, however, is believed to significantly affect or have the potential to significantly affect beneficial uses of the lower South San Francisco Bay. Therefore, this BUA focuses on possible beneficial use impacts related to mercury.

The lower South San Francisco Bay maintains many beneficial use designations. Ocean commercial and sport fishing (COMM), estuarine habitat (EST), preservation of rare or threatened species (RARE), water contact recreation (REC-1, fishing), shellfish harvesting (SHELL), fish spawning (SPWN), and wildlife habitat (WILD) beneficial uses would be most vulnerable to project influences on mercury behavior.

These beneficial uses, COMM, EST, RARE, REC-1, SHELL, SPWN, and WILD, are most sensitive to changes in in-bay mercury biotransformation. Therefore, a project effect on net transport of mercury from the Guadalupe River to the Bay is of greatest concern. Because mercury in the Guadalupe River system is found mostly in particulate form, transport of sediment is the mode and medium of transport. Implementation of erosion and sediment control and SMP would avoid and minimize the potential for increased transport and loading of mercury to San Francisco Bay. Disturbance and subsequent transport of mercury-laden sediments and soils is an identifiable source of mercury loading to San Francisco Bay. The erosion control measures contained in the erosion and sediment control plan could substantially manage project-related erosion, thereby minimizing project effects. Furthermore, the SMP would establish threshold criteria whereby mercury-laden soils would be removed from the system. Together, these measures could significantly contribute to the overall reduction in the available mercury that is mobile in the lower Guadalupe River. In particular, the implementation of a SMP could result in significant exports of mercury from project reaches to licensed disposal facilities. Therefore, the effects of construction- and operations-related transport and loading of mercury to San Francisco Bay are considered less than significant.

Project activities in the Guadalupe River watershed would not adversely affect navigation (NAV) and fish migration (MIGR) in lower South San Francisco Bay. Barriers to navigation and fish would not be constructed, and none is anticipated to develop because of flood control improvements in the lower watershed. In addition, project activities are not anticipated to affect noncontact water recreation (REC-2) opportunities in lower South San Francisco Bay. No disturbance of bed, bank, or topography in lower South San Francisco Bay is proposed as part of the LGRP. Finally, no aspect of the proposed LGRP is believed to render surface water quality in lower South San Francisco Bay unacceptable to industrial service supply beneficial uses.

Summary of Project Commitments and Mitigation Measures to Avoid or Reduce Impacts to Beneficial Uses

Table 2 (which follows this page and is identical to Table 7-1 in the EIR) summarizes project commitments and mitigation measures to avoid or reduce impacts to beneficial uses as generally discussed in this assessment but more explicitly described in the LGRP EIR.

Table 2. Mitigation and Monitoring Plan Summary

Impact	Mitigation Objective	Environmental Commitments	Mitigation Measures	Location	Mitigation Monitoring and Reporting Requirements	When Mitigation will be Implemented	Responsible Entity
Hydrologic and Hydraulic Conditions							
Potential for Flooding Induced by the LGRP	Reduce contribution of Guadalupe River to flooding problems in Alviso and minimize effects on Cargill Salt operations	None	HH-1: Construct West-Perimeter Levee Around Alviso	East bank of Alviso Slough from UPRR to northeast corner of the marina	NA	Before operation of the Corps' Guadalupe River Project	District
			HH-2: Construct Alviso Slough Overflow Weir	Immediately across from Alviso in natural low spot in Cargill levee	NA	Before operation of the Corps' Guadalupe River Project	District
			HH-3: Pump Cargill Salt Ponds	Cargill Salt Ponds A5, A7, A8D, and A8W	Operate, maintain, and report in accordance with O&M plan	As needed following flooding in Cargill ponds	District
			HH-4: Manage Vegetation in Alviso Slough from UPRR Downstream to Overflow Weir	East bank of Alviso Slough from UPRR to opposite the overflow weir	Operate, maintain, and report in accordance with O&M plan	Ongoing maintenance activity to allow proper channel function during flood events and ensure function of overflow weir	District
Geomorphology and Geologic Hazards							
No Significant Impacts Identified	NA	NA	NA	NA	NA	NA	NA
Water Quality							
Potential Release of Sediment or Sediment-Borne Pollutants during Construction	Minimize potential for releases of pollutants to the river by limiting construction to low-flow periods, implementing standard good house-keeping measures, removing mercury-laden soil from the watershed for disposal, and complying with regulatory requirements	Stormwater pollution prevention plan	No additional measures identified	Construction area	Monitor and report to RWQCB per permit requirements - copy District	District will monitor before construction to ensure that the SWPPP has been included in construction plans as per Bid Specifications. Must be submitted to the RWQCB before construction and must be posted on-site	District/ Contractor
		Erosion and sediment control plan		Construction area	NA	District will monitor before construction to ensure that the erosion and sediment control plan has been included in construction plans as per Bid Specifications	District
		Spill prevention and response plan		Construction area	Immediately report occurrences to RWQCB, DFG, and District	District will monitor before construction to ensure that the spill prevention and response plan has been included in construction plans as per Bid Specifications	District
		Soil management plan		Construction area	Report to RWQCB	District will monitor before construction to ensure that the soil management plan has been included in construction plans as per Bid Specifications	District

Table 2. Continued

Impact	Mitigation Objective	Environmental Commitments	Mitigation Measures	Location	Mitigation Monitoring and Reporting Requirements	When Mitigation will be Implemented	Responsible Entity
Water Quality (continued)							
		Hazardous and toxic materials contingency plan		Construction area	Immediately report occurrences to RWQCB and District	District will monitor before construction to ensure that hazardous and toxic materials contingency plan has been included in construction plans as per Bid Specifications	District
		Construction period limits		Construction area	NA	In-channel construction would be limited to the summer low-precipitation period (April 15–October 15). Construction period limits will be specified in Bid Specifications	District
Potential for Accidental Spills of Construction Materials	Minimize potential for accidental spills by implementing standard BMPs and complying with regulatory requirements	Stormwater pollution prevention plan	No additional measures identified	Construction area	Monitor and report to RWQCB per permit requirements - copy District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications. Must be submitted to the RWQCB before construction and must be posted on-site	District/ Contractor
		Spill prevention and response plan		Construction area	Immediately report occurrences to RWQCB, DFG, and District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
Potential Degradation of Water Quality as a Result of Vegetation and Sediment Management	Minimize potential for releases of pollutants to the river by limiting construction to low-flow periods, implementing standard good housekeeping measures, removing mercury-laden soil from the watershed for disposal, and complying with regulatory requirements	Stormwater pollution prevention plan	No additional measures identified	Construction area	Monitor and report to RWQCB per permit requirements - copy District	District will monitor before construction to ensure that the SWPPP has been included in construction plans as per Bid Specifications. Must be submitted to the RWQCB before construction and must be posted on-site	District/ Contractor
		Spill prevention and response plan		Construction area	Immediately report occurrences to RWQCB, DFG, and District	District will monitor before construction to ensure that the erosion and sediment control plan has been included in construction plans as per Bid Specifications	District
		Soil management plan		Construction area	Report to RWQCB	District will monitor before construction to ensure that the spill prevention and response plan has been included in construction plans as per Bid Specifications	District
		Hazardous and toxic materials contingency plan		Construction area	Immediately report occurrences to RWQCB and District	District will monitor before construction to ensure that the hazardous materials and toxic contingency plan has been included in construction plans as per Bid Specifications	District
		Construction period limits		Construction area	Monitor and report in accordance with O&M plan		District

Table 2. Continued

Impact	Mitigation Objective	Environmental Commitments	Mitigation Measures	Location	Mitigation Monitoring and Reporting Requirements	When Mitigation will be Implemented	Responsible Entity
Water Quality (continued)							
Potential Discharge or Mobilization of Mercury	Minimize potential for releases of pollutants to the river by limiting construction to low-flow periods, implementing standard BMPs, and removing mercury-laden soil from the watershed for disposal	Erosion and sediment control plan	No additional measures identified	Construction area	NA	District will monitor before construction to ensure that hazardous and toxic materials contingency plan has been included in construction plans as per Bid Specifications	District
		Soil management plan		Construction area	Report to RWQCB	In-channel construction would be limited to the summer low-precipitation period (April 15–October 15) construction period limits will be specified in Bid Specifications	District
	Minimize the potential for methyl mercury formation by removing contaminated materials as necessary	Soil management plan	No additional measures identified.	Cargill salt Ponds A5, A7, A8D, and A8W	Report to RWQCB	During construction of pond A8W overflow weir	District
Hazards and Hazardous Materials							
Construction Activities Affected by Exposure to Contaminated Soils		Hazardous and toxic materials contingency plan	No additional measures identified	Construction area	Immediately report occurrences to RWQCB and District	District will monitor before construction to ensure that a hazardous and toxic materials contingency plan have been included in construction plans as per Bid Specifications	District
		Soil management plan		Construction area	Report to RWQCB	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
Construction Activities Affected by Contaminated Groundwater		Soil management plan	No additional measures identified	Construction area	Report to RWQCB	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
Vegetation							
Potential for Loss of Riparian (4.65 ac.), Wetland (48.98 ac.), and Ruderal (83.15 ac.) Vegetation from Construction and Vegetation and Sediment Management	Minimize habitat disturbance through project design and vegetation protection plan. Mitigate riparian impacts through on-site plantings and undesirable-species replacement. Mitigate tidal wetlands with in-kind replacement in Districts salt pond A4 restoration site. Mitigate nontidal wetlands impacts with out-of-kind replacement in District's salt pond site. Ruderal impacts, although not significant, will be minimized by implementing erosion and sediment control plan	Vegetation protection plan	V-1: Replace or Compensate for Riparian and Wetland Habitat		NA	Riparian vegetation will be planted in reach A no later than end of 2003. Wetland mitigation will in Pond A4 in 2007	District

Table 2. Continued

Impact	Mitigation Objective	Environmental Commitments	Mitigation Measures	Location	Mitigation Monitoring and Reporting Requirements	When Mitigation will be Implemented	Responsible Entity
Vegetation(Continued)							
		Erosion and sediment control plan	Riparian: in-kind at 0.5:1 ratio	Reach A	Monitor riparian plantings for survival and density for 5 years, replace as needed to maintain 75% survival per year and at least 50% cover by the end of the monitoring period. Annual monitoring report to USFWS, NMFS, and DFG	2003	
			Wetland-tidal freshwater marsh: in kind @ 1:1 ratio	District's Pond A4	Fund prorated (±10%) share of monitoring costs specified for restoration project. Annual monitoring report to USFWS, NMFS, Corps, and DFG	2007	
			Wetland - freshwater marsh: out-of-kind @ 2:1 ratio	District's Pond A4	Fund prorated share of restoration project monitoring costs. Annual monitoring report to USFWS, NMFS, Corps, and DFG	2007	
Potential for Impacts on Tidal Salt Marsh, Diked Salt Marsh, Brackish Marsh, and Freshwater Marsh from Implementing the Baylands Mitigation Measure	Minimize impacts on habitat by restoring marsh habitat in pond A4		V-2: Replace or compensate for riparian wetland habitat. Additional mitigation will be provided to include wetland impacts from Baylands Mitigation Measure	District's Pond A4	Annual monitoring report to USFWS, NMFS, Corps, and DFG	2007	District

Table 2. Continued

Impact	Mitigation Objective	Environmental Commitments	Mitigation Measures	Location	Mitigation Monitoring and Reporting Requirements	When Mitigation will be Implemented	Responsible Entity
Wildlife							
Potential for Adverse Effects on Common Wildlife Species Associated with Riparian, Wetland, and Upland Habitat Loss	Minimize impacts on wildlife by replacing habitats and limiting disturbance through critical life stages by limiting construction and maintenance periods	Construction period limits	V-1: Replace or Compensate for Riparian and Wetland Habitat	Project site and District's Pond A4	Annual monitoring report to USFWS, NMFS, Corps, and DFG	Riparian and wetland habitat will be replaced by end of 2003 and 2007, respectively	District
			W-1: Avoid Nesting Raptors and Birds During Construction and Maintenance	Construction and vegetation and sediment management	NA	Before construction	District
Potential for Impacts on Western Snowy Plover	Avoid loss of breeding season in pond A8D	None	HH-3: Pump Cargill Salt Ponds	Pond A8D	Monitoring report to USFWS and DFG following flooding event	Following storms that flood pond A8D and coordinated with downtown Guadalupe River requirement to pump Pond A8D	District
Potential for Impacts on Nesting Raptors, including Burrowing Owls	Avoid construction impacts on nesting burrowing owls	None	W-1: Avoid Nesting Raptors and Birds During Construction and Maintenance		Monitoring report sent to DFG before construction begins	Before construction begins on overflow weir and Alviso levee	District
Fisheries							
Potential for Changes in Fish Habitat from the Construction of Floodwalls, Levees, and Other Structures	Minimize impacts on fisheries by preventing degradation of water quality	Stormwater pollution prevention plan	No additional measures identified	Construction area	Monitor and report to RWQCB per permit requirements - copy District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District/ Contractor
		Erosion and sediment control plan		Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Spill prevention and response plan		Construction area	Immediately report occurrences to RWQCB, DFG, and District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Hazardous and toxic materials contingency plan		Construction area	Immediately report occurrences to RWQCB and District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District

Table 2. Continued

Impact	Mitigation Objective	Environmental Commitments	Mitigation Measures	Location	Mitigation Monitoring and Reporting Requirements	When Mitigation will be Implemented	Responsible Entity
Fisheries (Continued)							
		Construction period limits		Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
Potential for Changes in Fish Habitat from the Construction of a New SR 237 Bridge	Minimize impacts on fisheries by preventing degradation of water quality	Stormwater pollution prevention plan	No additional measures identified	Construction area	Monitor and report to RWQCB per permit requirements - copy District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District/ Contractor
		Erosion and sediment control plan		Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Spill prevention and response plan		Construction area	Immediately report occurrences to RWQCB, DFG, and District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Hazardous and toxic materials contingency plan		Construction area	Immediately report occurrences to RWQCB and District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Construction area fish management program		Construction areas in or adjacent to low-flow channel	Monitor fisheries impacts and report findings to NMFS, USFWS, and DFG	District and contractor will monitor drawing construction in or near the low-flow channel	District/ Contractor
		Construction period limits		Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
Potential for Changes in Fish Habitat and Anadromous Fish Migration from the Construction and Operation of the SR 237 Bypass Option	Minimize impacts on fisheries by preventing degradation of water quality	Stormwater pollution prevention plan	No additional measures identified	Construction area	Monitor and report to RWQCB per permit requirements - copy District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District/ Contractor

Table 2. Continued

Impact	Mitigation Objective	Environmental Commitments	Mitigation Measures	Location	Mitigation Monitoring and Reporting Requirements	When Mitigation will be Implemented	Responsible Entity
Fisheries (Continued)							
		Erosion and sediment control plan		Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Spill prevention and response plan		Construction area	Immediately report occurrences to RWQCB, DFG, and District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Hazardous and toxic materials contingency plan		Construction area	Immediately report occurrences to RWQCB and District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Construction period limits		Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Construction area fish management program		Construction areas in or adjacent to low-flow channel	Monitor fisheries impacts and report findings to NMFS, USFWS, and DFG	District and contractor will monitor drawing construction in or near the low-flow channel	District/ Contractor
Potential for Changes in Fish Habitat and Anadromous Fish Migration from Vegetation and Sediment Management Activities in Reaches A–G	Minimize impacts on fisheries by preventing degradation of water quality and providing connections from dredged areas to main channel		F-1: Provide Fish Passage Connection to Low-Flow Channel	Sediment management areas	Annual monitoring report to USFWS, NMFS, and DFG describing corrective actions taken if needed	During project design and annually as needed to maintain connection to low-flow channel	District
		Stormwater pollution prevention plan		Sediment management areas	Monitor and report to RWQCB per permit requirements - copy District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District/ Contractor
		Erosion and sediment control plan		Sediment management areas	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Spill prevention and response plan		Sediment management areas	Immediately report occurrences to RWQCB, DFG, and District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District

Table 2. Continued

Impact	Mitigation Objective	Environmental Commitments	Mitigation Measures	Location	Mitigation Monitoring and Reporting Requirements	When Mitigation will be Implemented	Responsible Entity
Fisheries (Continued)							
		Hazardous and toxic materials contingency plan		Sediment management areas	Immediately report occurrences to RWQCB and District	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
		Construction period limits		Sediment management areas	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District
Land Use and Planning							
Potential for Construction-Related Nuisances from Raising the SR 237 Bridge	Minimize construction nuisances by controlling dust and noise. Minimize traffic nuisances by installing signs and limiting project activities to nonpeak traffic hours	Bay Area Air Quality Management District (BAAQMD) feasible control measures for emissions of respirable particulate matter smaller than 10 microns (PM10)	No additional measures identified	Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	Contractor
		Traffic safety plan		Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	Contractor
		Noise-reducing construction practices		Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	Contractor
Potential for Land Use Conflicts from Construction of SR 237 Bypass Culvert Option	Minimize safety hazards by installing guard rails and signs	None	LU-1: Install Safety Measures	SR 237	NA	Incorporate into project design	District
Recreation, Public Access, and Visual Resources							
Potential for Changes in Visual Resources and Views from Flood-Control Structures	Soften look of channel modification structures	None	RV-1: Plant vegetation after construction	Reaches D-G	None	Incorporate into project design	District

Table 2. Continued

Impact	Mitigation Objective	Environmental Commitments	Mitigation Measures	Location	Mitigation Monitoring and Reporting Requirements	When Mitigation will be Implemented	Responsible Entity
Transportation and Traffic							
Potential for Roadway Safety Hazards	Minimize traffic safety hazards by installing signs and limiting project-related traffic to nonpeak traffic hours	Traffic safety plan	No additional measures identified	Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	Contractor
Increased Delay for Traffic Traveling Across the SR 237 Bridge	Minimize traffic delays by installing signs and limiting project activities to nonpeak traffic hours	Traffic safety plan	No mitigation available to reduce to less-than-significant level	Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	Contractor
Air Quality							
	Minimize air quality impacts by controlling dust and ensuring equipment is in proper state of repair	BAAQMD feasible control measures for emissions of respirable particulate matter smaller than 10 microns (PM10)	No additional measures identified	Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	Contractor
Noise							
	Minimize noise impacts by ensuring equipment has proper mufflers and is in proper state of repair; designate a noise abatement coordinator to respond to local complaints	Noise-reducing construction practices	No additional measures identified	Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	District/ Contractor
Public Services and Utilities							
	Minimize potential for interruption of service by coordinating with utilities in the construction corridor	Service provider coordination before construction	No additional measures identified	Construction area	NA	District will monitor before construction to ensure that all environmental commitments and mitigation measures have been included in construction plans as per Bid Specifications	Contractor
Cultural Resources							
Potential for disturbance of recorded and undiscovered cultural resources in reaches A–G.	Minimize potential for impacts on cultural resources by monitoring construction activity, stopping work if potential resources are encountered, and appropriate treatment of encountered resources	Cultural resources, input avoidance measures		Excavated areas in construction area	Immediately stop work and report occurrences to County Coroner and District	Before and during LGRP excavations	District/ Contractor

Table 2. Continued

Impact	Mitigation Objective	Environmental Commitments	Mitigation Measures	Location	Mitigation Monitoring and Reporting Requirements	When Mitigation will be Implemented	Responsible Entity
Cultural Resources (Continued)							
			CR-1: Monitor all excavated areas		Monitor on-site during excavations report to District, Corps, and SHPO as per cultural resources PA	Before and during LGRP excavations	District
			CR-2: Avoid vibrational impacts on Alviso historic district by restricting use of pile drivers near historic structures		Monitor on-site during excavations report to District, Corps, and SHPO as per cultural resources PA	During construction	District
			CR-3: Restrict use of staging areas 5 and 10 to avoid known sites		Monitor on-site during excavations report to District, Corps, and SHPO as per cultural resources PA	During construction	District
			CR-4: Avoid impacts on CA-SCL-5		Monitor on-site during excavations report to District, Corps, and SHPO as per cultural resources PA	Before and during construction	District

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